

**ANTENNA CONFIGURATION FOR  
WIRELESS COMMUNICATION DEVICE**

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**ABSTRACT OF THE DISCLOSURE**

[048] An improved method and system for optimum placement of multiple antenna elements on circuit boards for wireless communication systems used in portable devices such as laptop computers and personal digital assistants (PDAs). Multiple antenna elements are placed on a circuit board with the individual antenna elements being placed such that they are orthogonal with respect to each other. In one embodiment of the present invention two antenna elements are placed on a circuit board in an orthogonal orientation to maximize the signal strength for an RF signal at a single frequency. In an alternate embodiment of the invention, four antenna elements are placed on the circuit board to maximize the signal strength for RF signals at two different frequencies. In the various embodiments of the present invention the gain characteristics of the various antenna elements are enhanced by placing the individual antenna elements in a predetermined orientation with respect to a ground plane on the circuit board. The placement of the antenna elements on a circuit board in accordance with the present invention maximizes signal strength by providing optimum spatial diversity and polarization diversity for the individual antenna elements. A wireless communication system implementing the present invention comprises a diversity switch that is operable to control which of the individual antenna elements is connected to the RF module of the wireless interface.